



Sheet # 8 (Inheritance)

1. Write the following program which contains an error. Find the error by explaining the reason. Try to solve this error by two different ways?

```
#include<iostream>
using namespace std;
class Vehicle
{
private:
int  Wheels;
float Weight;
public:
Vehicle(int ini_wheels= , float ini_weight= )
{  Wheels=ini_wheels;
  Weight=ini_weight;}
void Input()
{ cout<<"Wheels= ";  cin>>Wheels;
  cout<<" Weight= ";  cin>>Weight;}
void Display()
{  cout<<"Wheels= "<<Wheels<<" Weight= "<<Weight <<endl;}
};
class Car : public Vehicle
{
private:
int Passengers;
public:
Car(int ini_wheels, float ini_weight, int people= )
{  Wheels=ini_wheels;
  Weight=ini_weight;
  Passengers=people; }
void Input()
{Vehicle::Input( );           //using the parent(base) methods
  cout<<"Passenger= ";  cin>>Passengers; }
void Display()
{ cout<<"Car: ";
  Vehicle::Display( );
  cout<<"Passenger= "<<Passengers<<"\n";}
};
int main()
{
  Vehicle unicycle( );      unicycle.Display();
  Vehicle unicycle ;        unicycle .Display();
  Vehicle unicycle ( );      unicycle .Display( );
  cout<<"\n";
  Car sedan( , . , );        sedan.Display();
  Car sedan ( , );           sedan .Display();
  return ; }
```



-
2. Construct class called **Shape** has a **name** attribute and four methods: **Constructor, get, set, and display**. Then, construct another two classes called **Circle**, and **Rectangle** which both *inherit the Shape class*. The Circle class has a **radius** attribute where the Rectangle class has **width** and **height** attributes. The both classes have the same previous methods related to each. **Write a complete C++ program which creates objects from both, the Shape and Circle classes. Test all the classes' methods? Draw the complete UML for the classes?**

 3. Construct class called **Person** has **name, age** attributes and six methods: **Constructor, get, set, and display**. Then, construct another class called **Student** which *inherits the Person class* and has a **GPA** attribute and the same previous methods related to the student. **Write a complete C++ program which creates objects from both, the Person and Student classes. Test all the classes' methods? Draw the complete UML for the classes?**